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A RARE SPECIES OF CHITON FROM PIONEER SEAMOUNT OFF CENTRAL CALIFORNIA

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In connection with the submarine geological work of the California Academy of Sciences under Contract No. N9 onr 94400 much biological material of interest was secured. Since the project was primarily organized to obtain rocks in quantity from deep water, sessile organisms were especially likely to appear in the dredge. Among other things, a great many mollusks of the order Polyplacophora (chitons) were obtained. In the dredge haul at Station 27 on Pioneer Seamount two individuals of a species of *Placiphorella* were found attached to one of the volcanic rocks. There were practically no other living organisms present but large, rigid, siliceous sponges, all dead, were abundant. The chitons seem to answer the very brief, preliminary description which was given for the following species.

Placiphorella (Placophoropsis) pacifica Berry

Plate 20, figures 6, 10, and 11; text figures 1, 2, and 3

Placiphorella pacifica BERRY, Lorquinia, Jan. 1919, p. 6. Sta. 4245, 95–98 fathoms, Kasaan Bay, Alaska *(Albatross)*. DALL, Bull. 112, U. S. Nat. Mus., 1921, p. 196.

The original description appeared in a publication which is to be found in few libraries and we have seen no additional information regarding the species. Therefore, it is quoted as follows:

"Shell obovate, depressed. Anterior valve with 12–14 low, radiating ribs. Central areas of median valves nearly smooth; lateral areas raised, ornamented with 2 low, weakly nodulose ribs. Tail valve small, with subterminal mucro. Head valve with 16 slits, median valves with 1–1 slits, tail valve slitless. Girdle narrow behind; expanding into a broad lobe in front; covered dorsally by minute, microscopic spinelets and occasional slender spinose setae and tufts of spines."

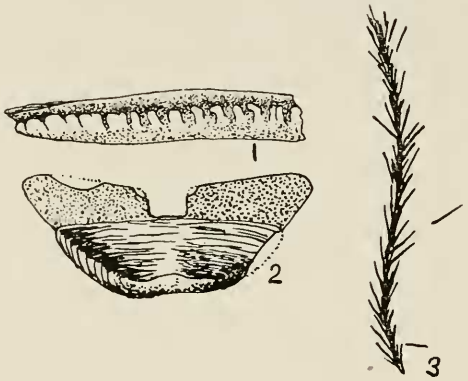

Fig. 1. Front view of half of anterior valve showing the number and the approximate shape of the "teeth" or "slits" on the insertion plate. Total width of anterior valve, 13.7 mm.; of this half, 6.6 mm. From hypotype No. 9529 (C. A. S.).

Fig. 2. Top view of posterior valve showing the squared notch in the insertion plate. Total width, left to right, 8.0 mm. From hypotype No. 9530 (C. A. S.).

Fig. 3. One of the long spinose plumule-like projections from the mantle showing length and approximate positions of the spines. Length, 2.0 mm. From hypotype No. 9529 (C. A. S.).

The type locality, U. S. S. *Albatross* Sta. 4245, is described in detail in Rept. U. S. Com. Fish & Fisheries for 1903 (1905), p. 130. Kasaan Bay is on Prince of Wales Island, southeast Alaska, and the date of collecting was July 11, 1903.

While the original description is somewhat generalized and without measurements or illustrations it is believed that there is a fair possibility

ours may belong to the same species as the specimen or specimens dredged by the *Albatross* party. Some other species range from relatively shallow northern waters to deeper zones to the southward. Our specimens came from a depth of 500–650 fathoms and were obtained on the flank of Pioneer Seamount a little south of west of Point Montara, San Mateo County, California, and about 45 miles off shore.

The radiating ribs on the anterior valve mentioned by Berry, are not present on our smaller specimen. On the larger specimen, however, the radiating ribs are present. The posterior margin of this valve is nearly straight in both specimens. Intermediate valves show the "2 low, weakly nodulose ribs" described by Berry. Ground sculpture on all valves of our larger specimen consists of rather rough transverse growth lines, set with small closely spaced rounded granules visible only with low magnification. This granular decoration is well developed on the lateral areas, becomes obsolete on the central areas, and disappears toward the jugum. On the smaller specimen this feature is much less prominent. A prominent feature is the well marked overhang of the tegmentum on all valves.

Entire girdle covered on the dorsal and ventral sides with extremely fine sandy scales and set with short glass-like spicules visible under moderate magnification. In addition, tufts of minute translucent scaleless spines, 3 to 8 in a bunch, are visible in the photographs on both surfaces of the elongated anterior portion of the girdle. These tufts extend back to the posterior end on the upper surface but disappear on the posterior surface from the head backward. Slender, flexible setae, about 2 mm. long, densely covered with spicules branching from the stem, are found on both surfaces. These are more abundant on the dorsal side and especially pronounced around the margin of the girdle. There are seven tentacle-like projections on the precephalic lobe of the mantle plus about three shorter nodes, all with a dense growth of spicules similar to those of the mantle. There are 15 gills on one side and 14 on the other in each specimen.

The smaller specimen, being somewhat damaged in the dredge, was disarticulated and the anterior valve was found to have 24 irregularly shaped projections, somewhat like the hinge teeth of a taxodont such as *Arca*. The spaces between these correspond to the "slits" in chiton terminology. The greater number of teeth (24) in the anterior valve of one of our specimens compared with the number (16) in the one described by Berry appears to be the only tangible major difference between the two. The posterior valve of our smaller specimen is triangular in shape and the insertion plate has a deep square notch medially.

Color of the valves a warm seal brown, lighter in the central areas. In the larger specimen the brown coloration is considerably darker toward the posterior end. Color of girdle a somewhat similar brown.

The presence of numerous "slits" in the anterior valve seems to indicate clearly that these specimens belong in the subgenus *Placophoropsis* Pilsbry (1893:312). The name was given to "*Placophora (Euplacophora) atlantica*" Verrill & Smith, a deep water species found off the coast of New England. Pilsbry put the subgenus under *Plaxiphora* Gray, and Thiele (1929:11) included it under *Placiphorella*. Our shells differ markedly from *P. atlantica* in shape being almost circular instead of obovate. In addition, the lateral areas of the intermediate valves are bifurcated by rather prominent raised nodulous ribs, whereas in *P. atlantica* the lateral areas are described as "slightly excavated in the middle." Although other features of the shell and girdle approximate those in *P. atlantica*, the differences are enough to give us confidence that we are dealing here with a different species.

Measurements of both specimens in alcohol (the larger shown in the plate) are as follows:

	Larger	*Smaller*
Length of animal	30.9	25.0
Width of animal	23.9	21.4
Height of animal	5.0	4.2
Length of shell	17.5	15.3
Width of shell	17.5	16.0
Extension of girdle from edge of anterior valve	12.8	9.0

LITERATURE CITED

Pilsbry, H. A.

1892–1893. Manual of conchology, Ser. 1, 14:i–xxxiv, 1–350, pls. 1–68.

Thiele, J.

1929. Handbuch der systematischen Weichtierkunde, Band 1, Teil 1, pp. 1–376, 470 figs. in text.